

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: J. Hirokane et al. **EXAMINER:** Not Yet Known
U.S.S.N.: Not Yet Known **ART UNIT:** Not Yet Known
FILED: HEREWITH
TITLE: METHOD FOR FORMING MICROPATTERNS

CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: **BOX PATENT APPLICATION**, Commissioner for Patents, Washington, D.C. 20231 on February 15, 2002.

By: 

Donna R. Davis

BOX PATENT APPLICATION
 Commissioner of Patents
 Washington, D.C. 20231

PRELIMINARY AMENDMENT FILED WITH APPLICATION

Sir:

s

Applicants respectfully request entry of the following amendments prior to calculating the fee for, and prior to considering the patentability of the above-referenced application. A version of the amendments that includes markings to denote the amended subject matter is included below.

In the Claims

Please amend claim 14-16, 19, 21, 22, 25, 26, 28, 29, 33, 35 and 37 as follows:

2006022692001

14. (Amended) A method for forming micropatterns as claimed in Claim 12, wherein the method further comprises, after selectively removing the modified layer, etching the substrate having no metallic film formed thereon by using the metallic film as a mask, and selectively removing the metallic film thereafter.

15. (Amended) A method for forming micropatterns as claimed in Claim 6, wherein the method comprises, after etching the region of the substrate having no mixed film formed thereon for the predetermined amount, selectively removing the remaining mixed film by sputter etching.

16. (Amended) A method for forming micropatterns as claimed in Claim 6, wherein the mixed film is formed in a region smaller than the spot diameter of the irradiated converged optical beam.

19. (Amended) A method for forming micropatterns as claimed in Claim 6, wherein the substrate is made of Si or SiO₂, and the metallic film is made of one selected from the group consisting of Al, Co, and Pd.

21. (Amended) A method for forming micropatterns as claimed in Claim 4, wherein the mixed layer is formed in a region smaller than the spot diameter of the irradiated converged optical beam.

22. (Amended) A method for forming micropatterns as claimed in Claim 4, wherein after forming the metallic film, a transparent film is formed on the metallic film before irradiating the converged optical beam.

25. (Amended) A method for forming micropatterns as claimed in Claim 4, wherein the mask layer is made of Si, SiN, or SiO₂, and the metallic film is made of Al, Co, Fe, Ni, Pd, or Ti.

26. (Amended) A method for forming micropatterns as claimed in Claim 4, wherein the remaining mixed layer is selectively removed by sputter etching.

28. (Amended) A method for forming micropatterns as claimed in Claim 3, wherein the heat-sensitive multilayer film has a multilayered film structure comprising at least one metallic film and at least one non-metallic film which are alternately laminated, and the mixed film is formed by alloydizing the metallic film and the non-metallic film elevated to the predetermined temperature or higher.

29. (Amended) A method for forming micropatterns as claimed in Claim 3, wherein, after forming the heat-sensitive multilayer film, a transparent film is formed on the heat-sensitive multilayer film before forming the mixed film.

33. (Amended) A method for forming micropatterns as claimed in Claim 3, wherein the method further comprises, after selectively removing the portion of the heat-sensitive multilayer film other than the mixed film, etching a region of the substrate having no mixed film formed thereon by using the remaining mixed film as a mask.

35. (Amended) An optical disk master produced by using the method for forming micropatterns as claimed in Claim 1.

37. (Amended) A work stamper for optical disks produced by forming an electrocasted film using the optical disk stamper as claimed in Claim 36 as an electrode, and peeling off the electrocasted film from the optical disk stamper.

REMARKS

The above-referenced patent application is being filed concurrently with the submission of this communication. Claim 37 is amended herein to correct an inadvertent typographical error, and each of claims 14-16, 19, 21, 22, 25, 26, 28, 29, 33 and 35 is amended to remove the multiple dependencies thereof. No new matter is introduced by this amendment.

Applicant respectfully requests entry of this amendment prior to calculating the fee for, and prior to considering the patentability of this application.

If the undersigned can be of any assistance in advancing the prosecution of this case, the Examiner is invited to contact him through the information given below.

Respectfully submitted,

Date: February 15, 2002

By: 

Richard J. Roos, Reg. No. 45,053
Dike, Bronstein, Roberts & Cushman
Intellectual Property Group
EDWARDS & ANGELL, LLP
P.O. Box 9169
Boston, MA 02209
Tel: 617-439-4444
Fax: 617-439-4170
Email rroos@ealaw.com

BOS2_191039.1

Version of amendments with markings to indicate amended subject matter

In the Claims

Please amend claim 14-16, 19, 21, 22, 25, 26, 28, 29, 33, 35 and 37 as follows:

14. (Amended) A method for forming micropatterns as claimed in Claim 12 [or 13], wherein the method further comprises, after selectively removing the modified layer, etching the substrate having no metallic film formed thereon by using the metallic film as a mask, and selectively removing the metallic film thereafter.

15. (Amended) A method for forming micropatterns as claimed in Claim 6 [or 7], wherein the method comprises, after etching the region of the substrate having no mixed film formed thereon for the predetermined amount, selectively removing the remaining mixed film by sputter etching.

16. (Amended) A method for forming micropatterns as claimed in Claim 6 [or 7], wherein the mixed film is formed in a region smaller than the spot diameter of the irradiated converged optical beam.

19. (Amended) A method for forming micropatterns as claimed in Claim 6 [or 7], wherein the substrate is made of Si or SiO₂, and the metallic film is made of one selected from the group consisting of Al, Co, and Pd.

21. (Amended) A method for forming micropatterns as claimed in Claim 4 [or 20], wherein the mixed layer is formed in a region smaller than the spot diameter of the irradiated converged optical beam.

22. (Amended) A method for forming micropatterns as claimed in Claim 4 [or 20], wherein after forming the metallic film, a transparent film is formed on the metallic film before irradiating the converged optical beam.

25. (Amended) A method for forming micropatterns as claimed in Claim 4 [or 20], wherein the mask layer is made of Si, SiN, or SiO₂, and the metallic film is made of Al, Co, Fe, Ni, Pd, or Ti.

26. (Amended) A method for forming micropatterns as claimed in Claim 4 [or 20], wherein the remaining mixed layer is selectively removed by sputter etching.

28. (Amended) A method for forming micropatterns as claimed in Claim 3 [or 27], wherein the heat-sensitive multilayer film has a multilayered film structure comprising at least one metallic film and at least one non-metallic film which are alternately laminated, and the mixed film is formed by alloydizing the metallic film and the non-metallic film elevated to the predetermined temperature or higher.

29. (Amended) A method for forming micropatterns as claimed in Claim 3 [or 27], wherein, after forming the heat-sensitive multilayer film, a transparent film is formed on the heat-sensitive multilayer film before forming the mixed film.

33. (Amended) A method for forming micropatterns as claimed in Claim 3 [or 27], wherein the method further comprises, after selectively removing the portion of the heat-sensitive multilayer film other than the mixed film, etching a region of the substrate having no mixed film formed thereon by using the remaining mixed film as a mask.

35. (Amended) An optical disk master produced by using the method for forming micropatterns as claimed in [any one of Claims 1 to 7] Claim 1.

37. (Amended) A work stamper for optical disks produced by forming an electrocasted film using the optical disk stamper as claimed in Claim [45] 36 as an electrode, and peeling off the electrocasted film from the optical disk stamper.